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EC70-188 Know and Control Downy Brome

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know and control

DOWNY BROME



Cooperative Extension Service, University of Nebraska
College of Agriculture and Home Economics,
and U.S. Department of Agriculture Cooperating
E. F. Frolik, Dean J. L. Adams, Director

know and control Downy Brome

C. R. Fenster, G. A. Wicks and L. R. Robison^{1/}

Downy brome (*Bromus tectorum* L.) a native of Europe has become established throughout Nebraska. It is one of the most serious weeds in western Nebraska. It is especially troublesome in alfalfa, summer fallow, winter wheat, rangeland, waste areas, roadsides, shelterbelts, fence rows and railroad rights-of-way.

Downy brome is known by a variety of names. Common names in addition to downy brome are cheatgrass, cheatgrass brome, downy brome grass, military grass, wild oats, downy chess and cheat.

This weedy annual brome is a constant threat to winter wheat and rangeland. Under certain climatic and field conditions, it can seriously curtail production of winter wheat. At Alliance and North Platte, a moderate infestation of downy brome reduced wheat yields 30 percent and a heavy infestation 80 percent. Overgrazed grassland lends itself to invasion of downy brome and greatly reduces the economic returns of the grassland.

Downy brome depends largely on surface moisture for growth. At maturity, plants are a serious fire hazard. They burn rapidly and create intense heat.

The plant is a strong invader and competitor of other plants. Before seed heads emerge, downy brome is a palatable grass. However, as it matures, it becomes very unpalatable.

Description

Downy brome is a winter annual or early spring annual reproducing by seed. The plant usually begins growth in the fall of the year or early spring. Vernalization is necessary for production of seed. The plant tillers profusely and overwinters in a rosette stage. In early spring, the plant continues to tiller, joints and sets seed. The plant grows from 6 inches to 24 inches tall. Height depends on available moisture, fertility and plant competition. At time of emergence, leaves are about 1/32 of an inch wide and a brownish-green color. As the plant and seed reaches maturity, it turns a purplish-tan color.

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Leaves—Leaves are flat and 2 to 6 inches long. Leaves and sheath are hairy.

Roots—The root system is fibrous and relatively shallow.

Stems—The stems are smooth, slender and erect, protruding from a much branched base.

Panicle and Seed—Panicles are 2 to 6 inches long, slender and drooping to one side. Spikelets are numerous, 5 to 8, flowered with slender straight awns, $\frac{1}{2}$ to $\frac{3}{4}$ inch long, each attached to a hairy, buff-brown, narrow seed about $\frac{1}{2}$ inch long. Seeds are light and fluffy—about 208,000 per pound. Germination of seed is usually high. However, seed will infest fields for several years because of natural seed dormancy or lack of desirable germinating conditions.



Downy brome. Showing plant and enlarged spikelet, ligule area and seed



Native grass pasture badly infested with downy brome. The word "downy brome" was written by applying Atrazine.



Crested wheatgrass to the right. Note effective control of downy brome in the crested wheatgrass.

Downy Brome Control

Eliminate Seed Sources

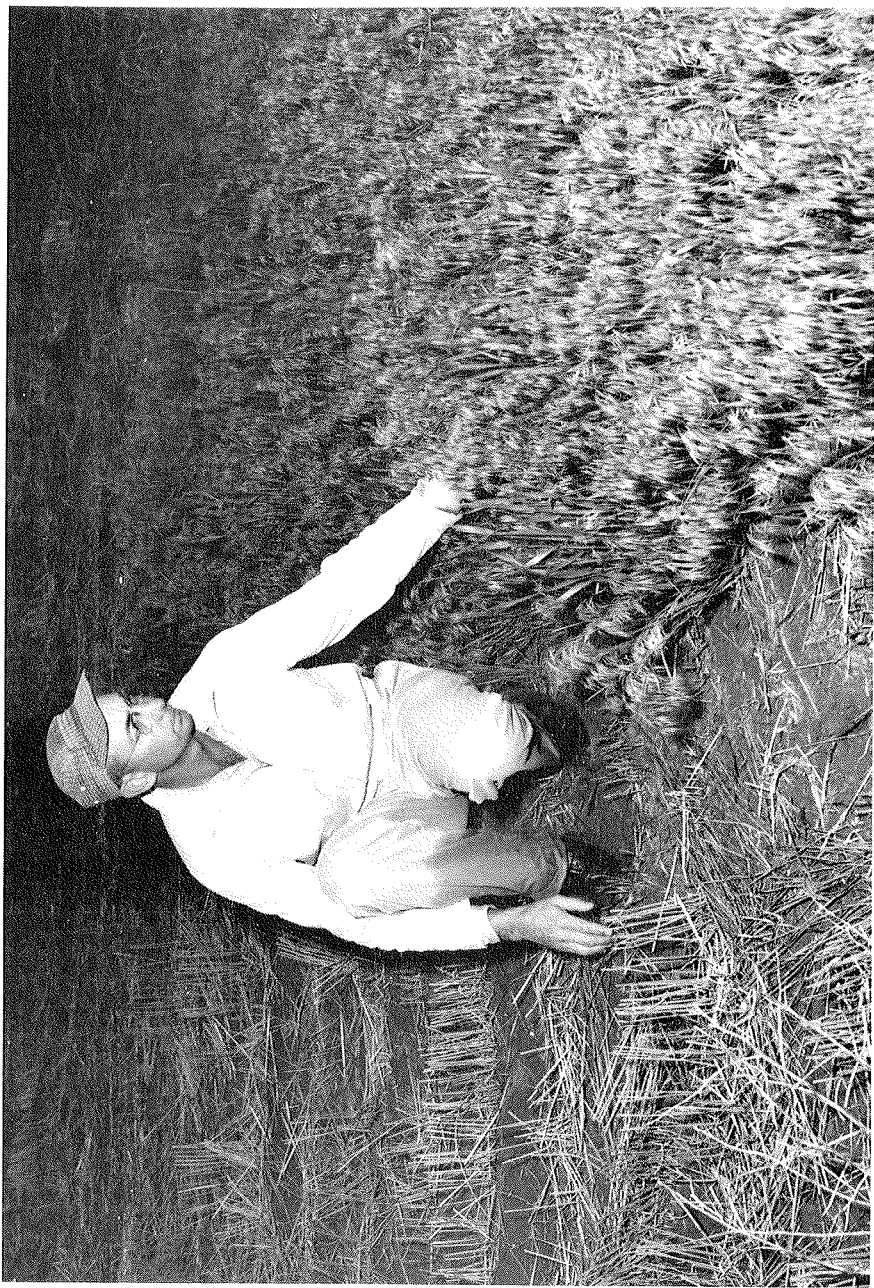
1. Do away with weedy waste places. Roadside ditches should be tilled and cropped when possible.
2. Seed perennial, cool-season grasses such as crested wheatgrass or Russian wild rye in waste areas. Good vigorous stands of grasses or legumes or combinations of grasses and legumes are highly competitive with downy brome and other weeds. Crested wheatgrass and Russian wild rye are among the best.
3. Use good rangeland management practices. Harvest half the forage and leave half. Practice rotational grazing.
4. On cultivated fields destroy the weeds before they produce seed.
5. Plant clean seed. Downy brome seed is often found in small grain and grass seed.

Control With Tillage

1. Destroy the weeds during the first tillage operation. If weeds are not killed at this time, they are likely to develop an extensive root system, which makes them even more difficult to kill the next time over.



Rotations help control downy brome. Entire area was seeded to downy brome. Winter wheat fallow rotation contained 30,000 plants per acre (foreground). Winter wheat sorghum fallow rotation contained 300 plants per acre, (background).



The area to the left was sprayed with 2 lb/A of atrazine in October in a wheat stubble. Check area to the right. Weeds are primarily downy brome.



Roadside ditch full of weeds, including downy brome. Provides an excellent source of weed seed for infestation of fields.



Roadside ditch worked down and cropped.

2. Underground tillage tools (sweeps and rodweeders). Soil must be dry enough for downy brome to wilt within 30 minutes after tillage for good control. Shallow depth of tillage cuts a larger percentage of roots from the plant and produces greater agitation of the soil. The greater the speed of travel of tillage, the greater the turbulence of the soil. This is important to break soil away from the weed roots. Trash rods, upside-down harrows, spur and mulch treaders will increase weed control.

3. When using a disk-type implement, operate it at a shallow depth (1 1/2 to 2 1/2 inches). A greater angle of the disk must be used to obtain full tillage between disks.

4. It is often necessary to follow the first tillage operation with another in one to two weeks to control the weeds that were missed the first time. This practice is also needed when land is plowed.

5. Be sure soil is dry enough for good weed kill. Weeds should wilt down within 30 minutes after tillage.

6. Perform timely tillage operations. Downy brome is a short-season plant; it must be controlled before the middle of May for western Nebraska and first of May for central and eastern Nebraska.

Control With Crop Rotations

Downy brome is most troublesome in crops that make most of their growth during our cool seasons—fall and early spring. The seed germinates along with fall seeded wheat and then continues a life cycle similar to wheat until its maturity in early summer.

Planting grain crops that have different life cycles than winter wheat and downy brome will help reduce downy brome populations. Sorghum, corn, soybeans and millet are planted in the spring. The spring seedbed preparation should kill downy brome that germinated the previous fall or early spring. Including these crops in the cropping sequence will help control downy brome infestations.

Do not overlook a 3-year rotation such as winter wheat-sorghum-fallow. This has proved to be as profitable as a winter wheat-fallow rotation for southern Nebraska and it gives a high degree of downy brome control.

Downy brome in alfalfa indicates poor alfalfa culture involving poor stands, low fertility or inadequate water. Control downy brome in alfalfa by: (1) planting in downy brome free soil, (2) maintaining good vigorous stands, (3) using adapted varieties, (4) having adequate fertility—especially phosphorus in the soil, (5) applying correct amounts of water under irrigation (6) controlling downy brome in adjacent areas.

Downy brome can not compete with a vigorous growth of alfalfa. Most productive stands of alfalfa in Nebraska only last 3 to 5 years. If alfalfa stands are deteriorating, plow and reestablish. Alfalfa is a desirable crop in the rotation.

Control With Chemicals on Non-Cropland

Chemicals which have been most effective and may be used on non-cropland are:

1. *Amitrole and Amitrole T*—Use 2 pounds per acre (4 pounds per acre 50% Amino Triazole or Weedazol). Apply in the spring before April 10. Amitrole is taken in through the leaves. It gives little preemergence control since it breaks down rapidly in the soil.

2. *Atrazine*—Apply 2 pounds per acre (2 1/2 pounds AAtrex 80% wettable powder) in enough water to give good coverage. Preemergence or early postemergence applications may be made in the fall or early spring. Spring applications should be made before April 10 or before the plants are two inches high. Excellent preemergence control generally results when at least one-half inch of rain falls soon after application.

Caution: Atrazine at 2 pounds per acre has carried over in the soil for periods in excess of one year.

Control With Chemicals on Cropland

Established Alfalfa: Apply simazine at the rate of 1 to 1.5 lb/A (1.25 to 1.87 Princep 80W) in late fall on dormant alfalfa.

Warm-season Grasses for Seed Production: Atrazine, diuron or monuron can be applied at the rate of 2-3 lb/A in the spring or fall of the year before weeds emerge. Do not use until second year after seeding. Herbicides are less effective in heavy plant residues. Rotation of herbicides may be desirable.

Windbreaks

See Extension Circular 70-130 and 60-1733 for the use of chemicals and tree species tolerance. Contact your county agent or local SCS representative for more information.

Caution

Herbicide residues in the soil, plant selectivity, herbicide costs and Federal Food and Drug regulations must all be considered before a chemical is acceptable for any weed control operation. At present there are no herbicides acceptable for selective control of downy brome in small grains or for residual control on fallow land.

Always read the herbicide label before using. Keep chemicals out of reach of children.



**"Use Crop Production
Chemicals Wisely!"**

**READ THE LABEL BEFORE
EACH USE.** Follow instructions;
heed all cautions and warnings.